

In the present system, the prosthesis or graft is comprised of a bifurcated tubular body having superior and inferior extremities. The superior extremity of the graft comprises a main tubular member which bifurcates into two tubular legs which comprise the inferior extremity of the graft. For clarity, the two tubular legs are referred to herein as the ipsilateral tubular leg and the contralateral tubular leg. An attachment system is secured to the superior end of the main tubular member as well as to the inferior ends of each of the tubular legs. Each attachment system is provided with lumen piercing members which are covered during deployment by the proximal/ipsilateral, distal and contralateral capsule assemblies. The balloon catheter, capsule catheter and capsule jacket are configured coaxially so that relative movement between them provides for deployment of the graft. The inflatable member of the balloon catheter is used to firmly implant the attachment systems, and thereby the graft, in the lumen.

In more detail, the intraluminal grafting system 50 is shown in FIGS. 1-8. The system includes a balloon catheter assembly 51, which is coaxially disposed within ipsilateral capsule catheter assembly 52, which is coaxially disposed within capsule jacket assembly 53. As shown in FIG. 8, the ipsilateral or proximal capsule assembly 130, contralateral capsule assembly 200 and distal capsule assembly 90 are used to contain the

the graft to its expanded position as soon as the attachment system is free of the capsules.

5 The graft 55 preferably contains a radiopaque marker system for locating the graft and for detecting any twisting of the graft during deployment. As shown in FIGS. 14-16, the preferred radiopaque marking system for a bifurcated graft 55 includes short and long radiopaque markers 256, 257 located longitudinally on the wall 173 of the graft in a line parallel to the longitudinal axis of the main tubular member 170 and located on opposite sides thereof. By having the short radiopaque markers on the side of the graft from which the contralateral leg extends and the long markers on the side of the graft from which the ipsilateral leg extends, for example, under flouroscopy, the proper orientation of the graft can be ensured. Elongate tubular leg marker coils 255 are sewn laterally within pre-determined valleys between crimps of the legs and on the same longitudinal axis as the long and short radiopaque markers 256 and 257. When detecting twist of the graft under fluoroscopy, the tubular leg markers appear with varying widths may appear lateral and medial to the guide wire in the leg.. The tubular leg markers, however, appear uniform in size and lateral to the guide wire in the leg for a tubular leg that is not twisted.

25 Additionally, radiopaque markers are positioned at the point of bifurcation of the graft. These two aid in determining whether the graft is twisted.